Amendments to the Claims

This list of claims will replace all prior versions and listings of claims in this application.

Listing of Claims

1-19 (Cancelled)

20. (Currently Amended)

A device for controlling a drawing process in a transfer press, with two tool parts which act in opposition to one another and between which a workpiece to be deformed is held and of which one tool part, in particular a negative mold, can be moved between two reversal points, of which tool parts the first is assigned to the commencement of a work cycle, by a mechanical crank mechanism driven at a constant rotational speed, and of which the second tool part, in particular a drawing cushion, is connected via a piston rod to the piston of a hydraulic differential cylinder, wherein the movement of the piston is controlled by the supply of pressure medium into a first chamber and by the discharge of pressure medium out of a second chamber of the differential cylinder, and in which, during a first time segment which extends within a range delimited by the first and the second reversal point, the rod-side face of the piston is acted upon by a pressure which is sufficiently high to accelerate the second tool part in such a way that, when the first tool part and the second tool part impinge one onto the other, both tool parts move at virtually the same speed, and in which a controllable throttle arranged between a bottom-slide chamber of the differential cylinder and a tank determines the pressure in the bottom-side chamber, wherein, in a second time segment (Δt_3) which follows the first time segment (Δt_2) and extends until the second reversal point (UT) is reached, the rod-side face (A_r) of the piston (16; 56) is acted upon by a second pressure (p_{sN}) which is lower than the pressure (p_{sH}) during the first time segment (Δt_2), further comprising two pressure accumulators (27, 31), of which one (27) is charged to the first pressure (p_{sH}) and the second (31) is charged to the second pressure (p_{sN}), and wherein the pressure accumulators are

selectively and alternatively connected to a common port of the differential cylinder so that the action of pressure medium upon the rod-side chamber (15s; 55s) at the differential cylinder (15; 55) takes place from the same pressure accumulator (27, 31) which is charged to the pressure (p_{stI}, p_{stN}) provided for the respective time segment (Δt_2, Δt_3, $\Delta t_4 + \Delta t_5$).

21. (Previously Presented)

The device as claimed in claim 20, wherein the rod-side face (A_r) of the piston (16; 56) is acted upon by the first pressure (p_{stI}) again in a third time segment ($\Delta t_4 + \Delta t_5$) of the work cycle, which third time segment commences with the reversal in the direction of movement of the crank mechanism (13) and ends at the latest at the time point (t_6) in which the crank mechanism (13) reaches the first reversal point (OT).

22. (Previously Presented)

The device as claimed in claim 20, wherein the rod-side face (A_r) of the piston (16; 56) is acted upon, further, by the second pressure (p_{stN}) in a third time segment ($\Delta t_4 + \Delta t_5$) of the work cycle, which third time segment commences with the reversal in the direction of movement of said piston and ends at the latest at the time point (t_6) at which the crank mechanism (13) reaches the first reversal point (OT).

23. (Cancelled)

24. (Previously Presented)

The device as claimed in claim 20, wherein the second pressure accumulator (31) is connected to the rod-side chamber (15s; 55s) of the differential cylinder (15; 55) via a nonreturn valve (39).

25. (Previously Presented)

The device as claimed in claim 24, wherein there is arranged, in the line (42; 53) leading to the bottom-side chamber (15b; $55b_a$) of the differential cylinder (15; 55), a proportional valve (35; 51) which serves as a controllable throttle and which controls the flow of pressure medium from one of the pressure accumulators (27, 31) to the bottom-side chamber (15b; $55b_a$) of the differential cylinder (15; 55) and from this chamber to the tank (26).

26. (Previously Presented)

The device as claimed in claim 20, wherein a first pump (25; 65) maintains the pressure (p_{sH}) in the first pressure accumulator (27), and a second pump (30) maintains the pressure (p_{sN}) in the second pressure accumulator (31).

27. (Previously Presented)

The device as claimed in claim 26, wherein the pumps (25, 30) are fixed-displacement pumps, and pressure cutoff valves (28, 32) are arranged respectively between a pump (25, 30) and the corresponding pressure accumulator (27, 31).

28. (Previously Presented)

The device as claimed in claim 26, wherein the pumps (65) are variable-displacement pumps.

29. (Previously Presented)

The device as claimed in claim 20, wherein there is arranged between the first pressure accumulator (27) and the rod-side chamber (15s; 55s) of the differential cylinder (15; 55) a valve

(36; 52) which controls the pressure medium flow and the outlet connection of which issues into the line (40, 41) leading from the nonreturn valve (39) to the rod-side chamber (15s; 55s).

30. (Previously Presented)

The device as claimed in claim 29, wherein the valve arranged between the first pressure accumulator (27) and the rod-side chamber (15s; 55s) of the differential cylinder (15; 55) is a switching valve (36).

31. (Previously Presented)

The device as claimed in claim 29, wherein the valve arranged between the first pressure accumulator (27) and the rod-side chamber (15s; 55s) of the differential cylinder (15; 55) is a proportional valve (52).

32. (Previously Presented)

The device as claimed in claim 25, wherein the bottom-side face of the piston (56) of the differential cylinder (55) is divided into two part faces (A_{ba}, A_{bi}) of different size, which are acted upon by pressures (p_{ba}, p_{bi}) of different magnitude, that the pressure (p_{ba}) which acts upon the larger part face (A_{ba}) is controlled by the proportional valve (51), and that the pressure (p_{bi}) which acts upon the smaller part face (A_{bi}) is controlled by a hydraulic machine (70) controllable continuously from pump operation to motor operation.

33. (Previously Presented)

The device as claimed in claim 32, wherein the piston (56) of the differential cylinder (55) is provided with a bore (57), into which a piston (58) fixed with respect to the housing engages, and that the supply of pressure medium to the inner bottom-side chamber ($55b_i$) formed from the bore

(57) and the piston (58) fixed with respect to the housing takes place via a duct (59) in the piston (58) fixed with respect to the housing.

34. (Previously Presented)

The device as claimed in claim 32, wherein an electric motor (62) driven the pumps (30, 65) and the hydraulic machine (70) via a common shaft (63, 66), and that a flywheel mask (64) is connected to the shaft (63).

35. (Previously Presented)

The device as claimed in claim 32, wherein the pressure (p_{Bi}) which acts upon the smaller part face (A_{bi}) is controlled such that it is lower than the first pressure (p_{sH}) in the first time segment (Δt_2) and is equal to the second pressure (p_{sN}) in the second time segment (Δt_3).

36. (Previously Presented)

The device as claimed in claim 35, wherein the pressure (p_{Bi}) which acts upon the smaller part face (A_{bi}) is controlled such that it is equal to the first pressure (p_{sH}) in the third time segment ($\Delta t_4 + \Delta t_5$).

37. (Previously Presented)

The device as claimed in claim 32, wherein the hydraulic machine (70) is controlled to tank conveyance between the reversal point (OT) assigned to the commencement (t_0) of the work cycle and the commencement (t_1) of the first time segment (Δt_2).

38. (Previously Presented)

The device as claimed in claim 33, further comprising a further nonreturn valve (75) arranged between the second pressure accumulator (31) and the line (73) leading from the hydraulic machine (70) to the inner bottom-side chamber ($55b_i$) of the differential cylinder (55).